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PRAXAIR TECHNOLOGY, INC.  
Law Department M1-557  
39 Old Ridgebury Road  
Danbury, CT 06810-5113

EXAMINER

GREENE, JASON M

ART UNIT PAPER NUMBER

1724

DATE MAILED: 02/11/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/725,845

Applicant(s)

ZHANG ET AL.

Examiner

Jason M. Greene

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9,12-15,17 and 22-28 is/are rejected.
- 7) ☒ Claim(s) 8,10,11,16 and 18-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10, 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I in Paper No. 8 is acknowledged. However, Applicants' arguments traversing the restriction requirement are persuasive and, therefore, the restriction requirement is withdrawn.

### ***Drawings***

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
3. The drawings are objected to under 37 CFR 1.84(u)(1) because the view numbers have not been preceded by the abbreviation "FIG." A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Response to Amendment***

### ***Response to Arguments***

4. Applicant's arguments filed 09 July 2002 have been fully considered but they are not persuasive. With regard to Applicants' argument that Dalton, Jr. et al. does not disclose the claimed intermolecular connecting groups, R, the Examiner recognizes that Dalton, Jr. et al. does not disclose the intermolecular connecting groups being the claimed multifunctional organic groups of (ii). However, Dalton, Jr. et al. discloses the intermolecular connecting groups, R, being secondary metal ions coordinated with secondary donors bonded to one or more of groups G to G<sub>4</sub> on the respective TECs in col. 5, lines 22-33.

### ***Claim Objections***

5. Claims 10 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 10 and 20 recite R being a member of group (iii) and being an amide group, an amino group, a carbinol group, or a carboxylic acid group. However, claims 1 and 13, from which claims 10 and 20 depend, have been amended such that group (iii) now consists of non-coordinating counter ions spaced between and separating the respective TECs. Additionally, the group reciting compounds that are functional groups

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forming hydrogen bonds with one or more groups of G to G<sub>4</sub> on the respective TECs has been deleted. Therefore, the limitations of claims 10 and 20 do not further limit the structure of R as recited in claims 1 and 13.

6. Claims 11 and 21 are objected to because of the following informalities: The phrase "group (iv)" in line 3 of the claims should be changed to read as "group (iii)" to correspond to the amendment to claims 1 and 13 presented in Applicants' response to the previous Office Action. Appropriate correction is required.

7. Claims 22, 24, and 26 are objected to because of the following informalities: The second listing of the ion Al<sup>3+</sup> should be deleted. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 22, 24, and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 22, 24, and 26 recite a number of ions having a charge of "n+". However, the possible values of n are not defined by the claim, the specification does not provide

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a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Since there is no disclosure of the possible values of  $n$ , it is not clear which specific cations are covered by the claims.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3, 5, 22, and 23 are rejected under 35 U.S.C. 102(b) as anticipated by Dalton, Jr. et al.

With regard to claim 1, Dalton, Jr. et al. discloses a process for selectively adsorbing a component of a gas mixture, which comprises contacting the mixture with a solid state, selective adsorbent material comprising a porous framework of a plurality of transition element complexes (TEC) having the claimed formula wherein, M is a primary transition metal ion, D to D<sub>4</sub> are primary donors and m is one, at least three of D to D<sub>4</sub> are occupying primary donor coordination sites on M but leaving at least one open coordination site on M for the component to react with M, G to G<sub>4</sub> are functional groups

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and n is one, at least one of G to G<sub>4</sub> being intramolecularly bonded to at least three adjacent primary donors to form at least one 5 or 6 member chelate ring on the primary transition metal ion and providing at least three donors thereto, M, D to D<sub>4</sub>, and G to G<sub>4</sub> together define one or more transition metal complexes, wherein said complexes are the same and wherein k is 1 and y is an integer sufficient to provide said porous framework of the plurality of TECs for the selective adsorption of the desired component thereon in col. 3, lines 1-48 and col. 4, line 62 to col. 5, line 3. Dalton, Jr. et al. discloses R being an intermolecular connecting group having secondary metal ions (Al) coordinated with secondary donors (O) to one or more of the groups G to G<sub>4</sub> on the respective TECs, wherein z is 1 in col. 5, lines 22-33.

With regard to claim 2, Dalton, Jr. et al. discloses the transition metal ion M being an element from the first row of transition metals (Co) in col. 4, lines 61-68.

With regard to claim 3, Dalton, Jr. et al. discloses the donors D to D<sub>4</sub> being neutral Nitrogen and Oxygen in col. 4, lines 61-68.

With regard to claims 5, 22, and 23, Dalton, Jr. et al. discloses R being a member of group (i) and having the claimed structure wherein D' is a secondary donor (oxygen) which is capable of being bonded to at least a G to G<sub>4</sub> group or a chelate ring on a coordination site on M and may also bond to an adjacent R group within the porous framework, and M' is a secondary metal ion (Al<sup>+3</sup>) coordinated with secondary donors D'

wherein x equals one and z equals two, said structure bonding the respective TECs to one another to form the porous framework in col. 5, lines 22-33.

12. Claims 12, 24, and 25 are rejected under 35 U.S.C. 102(b) as anticipated by Dalton, Jr. et al.

Dalton, Jr. et al. discloses a process for selectively adsorbing a component of a gas mixture, which comprises contacting the mixture with a solid state, selective adsorbent material comprising a porous framework of a plurality of transition element complexes (TEC) having the claimed formula wherein, M is the primary transition metal ion Co(II), D to D<sub>4</sub> are primary donors occupying primary donor coordination sites on M but leaving at least one open coordination site on M for an oxygen molecule to react with M, G to G<sub>4</sub> are functional groups and n is one, at least one of G to G<sub>4</sub> being intramolecularly bonded to at least three adjacent primary donors to form at least one 5 or 6 member chelate ring on the primary transition metal ion and providing at least three donors thereto, M, D to D<sub>4</sub>, and G to G<sub>4</sub> together define one or more transition metal complexes, wherein said complexes are the same, D' is a secondary donor (oxygen) or a group of secondary donors bonded to the chelate ring on a coordination site on M, M' is a secondary metal ion (Al<sup>+3</sup>) coordinated with secondary donors D', the group bonding the respective TECs to one another to maintain them in a porous framework and wherein z is 2 and x is 1, and y is an integer sufficient to provide said porous framework of the plurality of TECs for the selective adsorption of oxygen thereon in col. 3, lines 1-48 and col. 4, line 61 to col. 5, line 23.



13. Claims 13, 14, 26, and 27 are rejected under 35 U.S.C. 102(b) as anticipated by Dalton, Jr. et al.

With regard to claim 13, Dalton, Jr. et al. discloses a composition for selectively adsorbing a component of a gas mixture, which comprises a solid state, selective adsorbent material comprising a porous framework of a plurality of transition element complexes (TEC) having the claimed formula wherein, M is a primary transition metal ion, D to D<sub>4</sub> are primary donors and m is one, at least three of D to D<sub>4</sub> are occupying primary donor coordination sites on M but leaving at least one open coordination site on M for the component to react with M, G to G<sub>4</sub> are functional groups and n is one, at least one of G to G<sub>4</sub> being intramolecularly bonded to at least three adjacent primary donors to form at least one 5 or 6 member chelate ring on the primary transition metal ion and providing at least three donors thereto, M, D to D<sub>4</sub>, and G to G<sub>4</sub> together define one or more transition metal complexes, wherein said complexes are the same and wherein k is 1 and y is an integer sufficient to provide said porous framework of the plurality of TECs for the selective adsorption of the desired component thereon in col. 3, lines 1-48 and col. 4, line 62 to col. 5, line 3. Dalton, Jr. et al. discloses R being an intermolecular connecting group having secondary metal ions (Al) coordinated with secondary donors (O) to one or more of the groups G to G<sub>4</sub> on the respective TECs, wherein z is 1 in col. 5, lines 22-33.

With regard to claims 14, 26, and 27, Dalton, Jr. et al. discloses R being a member of group (i) and having the claimed structure wherein D' is a secondary donor (oxygen) which is capable of being bonded to at least a G to G<sub>4</sub> group or a chelate ring on a coordination site on M and may also bond to an adjacent R group within the porous framework, and M' is a secondary metal ion (Al<sup>+3</sup>) coordinated with secondary donors D' wherein x equals one and z equals two, said structure bonding the respective TECs to one another to form the porous framework in col. 5, lines 22-33.

***Claim Rejections - 35 USC § 103***

14. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

15. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. in view of Roman.

Dalton, Jr. et al. discloses G to G<sub>4</sub> being the same and being amino groups, wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are the same or different and are unsubstituted acyclic or carbocyclic groups, or substituted by Fluorine in col. 3, lines 6-7. Dalton, Jr. et al. discloses G to G<sub>4</sub> being imino groups, wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are different and are unsubstituted acyclic or carbocyclic groups in col. 4, lines 61-68.

Dalton, Jr. et al. does not disclose the amino group having the structure – NR<sup>1</sup>R<sup>2</sup>R<sup>3</sup> or the imino group having the structure –N=CR<sup>1</sup>R<sup>2</sup>.

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Roman discloses G to G<sub>4</sub> being the same and being alkoxy groups having the formula  $-R^1O^-$ , wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are the same or different and are unsubstituted acyclic or carbocyclic groups in col. 9, lines 1-48. Roman discloses G to G<sub>4</sub> being the same and being nitro groups having the formula  $-R^1-NO_2$ , wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are the same or different and are unsubstituted acyclic or carbocyclic groups in col. 9, lines 1-48.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to G<sub>4</sub> ligand groups of Roman for the G to G<sub>4</sub> ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to G<sub>4</sub> ligand group for another without a showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. as applied to claim 5 above, and further in view of Norman et al. and Roman.

Dalton, Jr. et al. does not disclose the TECs being  $Co(Me_2Ac_2H_2malen)(4-Py-O^-)$ .

Norman et al. discloses the TECs being  $Co(Me_2Ac_2H_2malen)$  wherein R<sub>3</sub> is a carbonyl functionality having a C<sub>2</sub> hydrocarbon substituent, Y is (CH<sub>2</sub>)<sub>2</sub>, R<sub>1</sub> is a C<sub>1</sub> alkyl group, and R<sub>2</sub> is hydrogen in col. 3, lines 1-31.

Roman discloses providing pyridines such as 4-methoxypyridine (4-Py-O<sup>-</sup>) to the TECs in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the (4-Py-O<sup>-</sup>) of Roman into the TECs of Norman et al. to provide an additional coordinating atom to those on the TECs to assist in the reversible binding of oxygen, as suggested by Roman in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to G<sub>4</sub> ligand groups of Norman et al. and Roman for the G to G<sub>4</sub> ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to G<sub>4</sub> ligand group for another without a showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

17. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. as applied to claim 5 above, and further in view of Norman et al. and Roman.

Dalton, Jr. et al. does not disclose the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>maltmen)(4-Py-O<sup>-</sup>).

Norman et al. discloses the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malen) wherein R<sub>3</sub> is a carbonyl functionality having a C<sub>2</sub> hydrocarbon substituent, Y is (CH<sub>2</sub>)<sub>2</sub>, R<sub>1</sub> is a C<sub>1</sub> alkyl group, and R<sub>2</sub> is hydrogen in col. 3, lines 1-31.

Roman discloses a similar TEC wherein Y is (CH<sub>3</sub>)<sub>2</sub>-C-C-(CH<sub>3</sub>)<sub>2</sub> in col. 9, lines 1-48 and providing pyridines such as 4-methoxypyridine (4-Py-O<sup>-</sup>) to the TECs in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the (4-Py-O<sup>-</sup>) and branched (CH<sub>3</sub>)<sub>2</sub>-C-C-(CH<sub>3</sub>)<sub>2</sub> group of Roman into the TECs of Norman et al. to provide an additional coordinating atom to those on the TECs to assist in the reversible binding of oxygen, as suggested by Norman et al. in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to G<sub>4</sub> ligand groups of Roman for the G to G<sub>4</sub> ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to G<sub>4</sub> ligand group for another without a showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

18. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. as applied to claim 1 above, and further in view of Roman.

Dalton, Jr. et al. does not disclose the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malophen)Py.

Roman discloses the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malophen) wherein X is oxygen, the R adjacent the X is methyl, and the R connecting the N atoms is an aryl in col. 5, lines 19-25 and col. 6, lines 25-47. Roman further discloses providing pyridines to the TECs in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Py of Roman into the TECs of Roman to provide

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an additional coordinating atom to those on the TECs to assist in the reversible binding of oxygen, as suggested by Roman in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to G<sub>4</sub> ligand groups of Roman for the G to G<sub>4</sub> ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to G<sub>4</sub> ligand group for another without a showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

19. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. as applied to claim 13 above, and further in view of Norman et al. and Roman.

Dalton, Jr. et al. does not disclose the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malen)(4-Py-O<sup>-</sup>) or Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>maltmen)(4-Py-O<sup>-</sup>).

Norman et al. discloses the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malen) wherein R<sub>3</sub> is a carbonyl functionality having a C<sub>2</sub> hydrocarbon substituent, Y is (CH<sub>2</sub>)<sub>2</sub>, R<sub>1</sub> is a C<sub>1</sub> alkyl group, and R<sub>2</sub> is hydrogen in col. 3, lines 1-31.

Roman discloses providing pyridines such as 4-methoxypyridine (4-Py-O<sup>-</sup>) to the TECs in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the (4-Py-O<sup>-</sup>) of Roman into the TECs of Norman et al. to provide an additional coordinating atom to those on the TECs to assist in the reversible binding of oxygen, as suggested by Roman in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to G<sub>4</sub> ligand groups of Norman et al. and Roman for the G to G<sub>4</sub> ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to G<sub>4</sub> ligand group for another without a showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

20. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. as applied to claim 13 above, and further in view of Roman.

Dalton, Jr. et al. does not disclose the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malophen)Py.

Roman discloses the TECs being Co(Me<sub>2</sub>Ac<sub>2</sub>H<sub>2</sub>malophen) wherein X is oxygen, the R adjacent the X is methyl, and the R connecting the N atoms is an aryl in col. 5, lines 19-25 and col. 6, lines 25-47. Roman further discloses providing pyridines to the TECs in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Py of Roman into the TECs of Roman to provide an additional coordinating atom to those on the TECs to assist in the reversible binding of oxygen, as suggested by Roman in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to G<sub>4</sub> ligand groups of Roman for the G to G<sub>4</sub> ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to G<sub>4</sub> ligand group for another without a

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showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

21. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dalton, Jr. et al. as applied to claim 1 above, and further in view of Norman et al. and Roman.

Dalton, Jr. et al. does not disclose the TECs being  $\text{Co}(\text{Me}_2\text{H}_2\text{H}_2\text{malmen})(4\text{-Py-O}^-)$ .

Norman et al. discloses the TECs being  $\text{Co}(\text{Me}_2\text{H}_2\text{H}_2\text{malen})$  wherein  $\text{R}_3$  is a hydrogen, Y is  $(\text{CH}_2)_2$ ,  $\text{R}_1$  is a  $\text{C}_1$  alkyl group, and  $\text{R}_2$  is hydrogen in col. 3, lines 1-31.

Roman discloses a similar TEC wherein Y is  $(\text{CH}_2)\text{-C}(\text{CH}_3)_2$  in col. 9, lines 1-48 and providing pyridines such as 4-methoxypyridine ( $4\text{-Py-O}^-$ ) to the TECs in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the ( $4\text{-Py-O}^-$ ) and branched  $(\text{CH}_3)_2\text{-C-C}(\text{CH}_3)_2$  group of Roman into the TECs of Norman et al. to provide an additional coordinating atom to those on the TECs to assist in the reversible binding of oxygen, as suggested by Norman et al. in col. 5, lines 1-14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the G to  $\text{G}_4$  ligand groups of Roman for the G to  $\text{G}_4$  ligand groups of Dalton, Jr. et al. to provide better gas adsorption or desorption properties. Mere substitution of one known G to  $\text{G}_4$  ligand group for another without a



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showing of unexpected or unobvious results being within the scope of one having ordinary skill in the art.

***Allowable Subject Matter***

22. Claims 8, 16, 18, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. Claims 10, 11, 20, and 21 would be allowable if rewritten to overcome the objections set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

24. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 8, 16, 18, and 19, the prior art of record of record does not teach or fairly suggest the process of claim 1 or the composition of claim 13 wherein the R group is a multifunctional organic group having one of the claimed formulas and forming covalent bonds with one or more of groups G to G<sub>4</sub> on the respective TECs.

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With regard to claims 10 and 20, the prior art of record does not teach or fairly suggest the process of claim 1 or the composition of claim 13 wherein the R group is an amide group, an amino group, a carbinol group, or a carboxylic group having one of the claimed formulas.

With regard to claims 11 and 20, the prior art of record does not teach or fairly suggest the process of claim 1 or the composition of claim 13 wherein the R group has one of the claimed formulas when the TECs are anionic or cationic.

### ***Double Patenting***

25. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

26. Claims 1-12 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-7 and 9-11 of copending Application No. 09/458,066. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

***Conclusion***

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (703) 308-6240. The examiner can normally be reached on Tuesday - Friday (7:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Simmons can be reached on (703) 308-1972. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jason M. Greene  
Examiner  
Art Unit 1724



jmg  
February 5, 2003



David A. Simmons  
Supervisory Patent Examiner  
Technology Center 1700